

UK Patent Application (19) GB (11) 2 325 544 (13) A

(43) Date of A Publication 25.11.1998

(21) Application No 9806719.2

(22) Date of Filing 28.03.1998

(30) Priority Data

(31) 9706874

(32) 04.04.1997

(33) GB

(51) INT CL⁶
G06F 17/30, G11B 23/40 27/031

(52) UK CL (Edition P)
G4A AUDB
G5R RB265 RB81
U1S S2105 S2106 S2107 S2108 S2120

(71) Applicant(s)

Unique ID Software Limited
(Incorporated in the United Kingdom)
57-59 Beak Street, LONDON, W1R 3LF,
United Kingdom

(56) Documents Cited
None

(72) Inventor(s)

Mark Anthony Bennett Wildig
Alexander David Wallace

(58) Field of Search
UK CL (Edition P) G4A AUDB, G5R RAC RB81 RGB
RHE
INT CL⁶ G06F, G11B

(74) Agent and/or Address for Service

Atkinson & Co
PO Box 1205, Sheffield, S9 3UR, United Kingdom

(54) Abstract Title

Media data database

(57) A data base of image data is built automatically as data is being transferred within a processing environment. A transfer of image data between a processing environment (101) and a storage medium (102) is detected. A database copy of the detected images is made and related to the particular storage medium. The technique may also be used for other media data such as audio tapes.

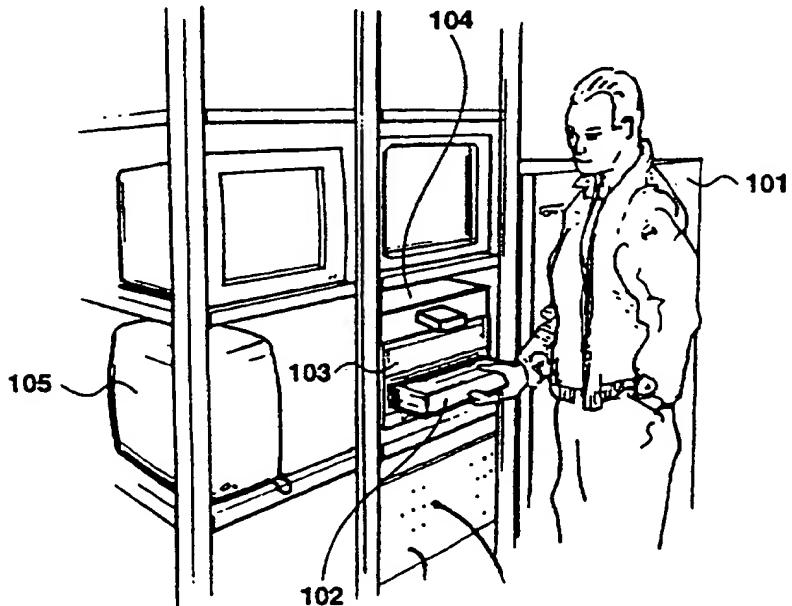
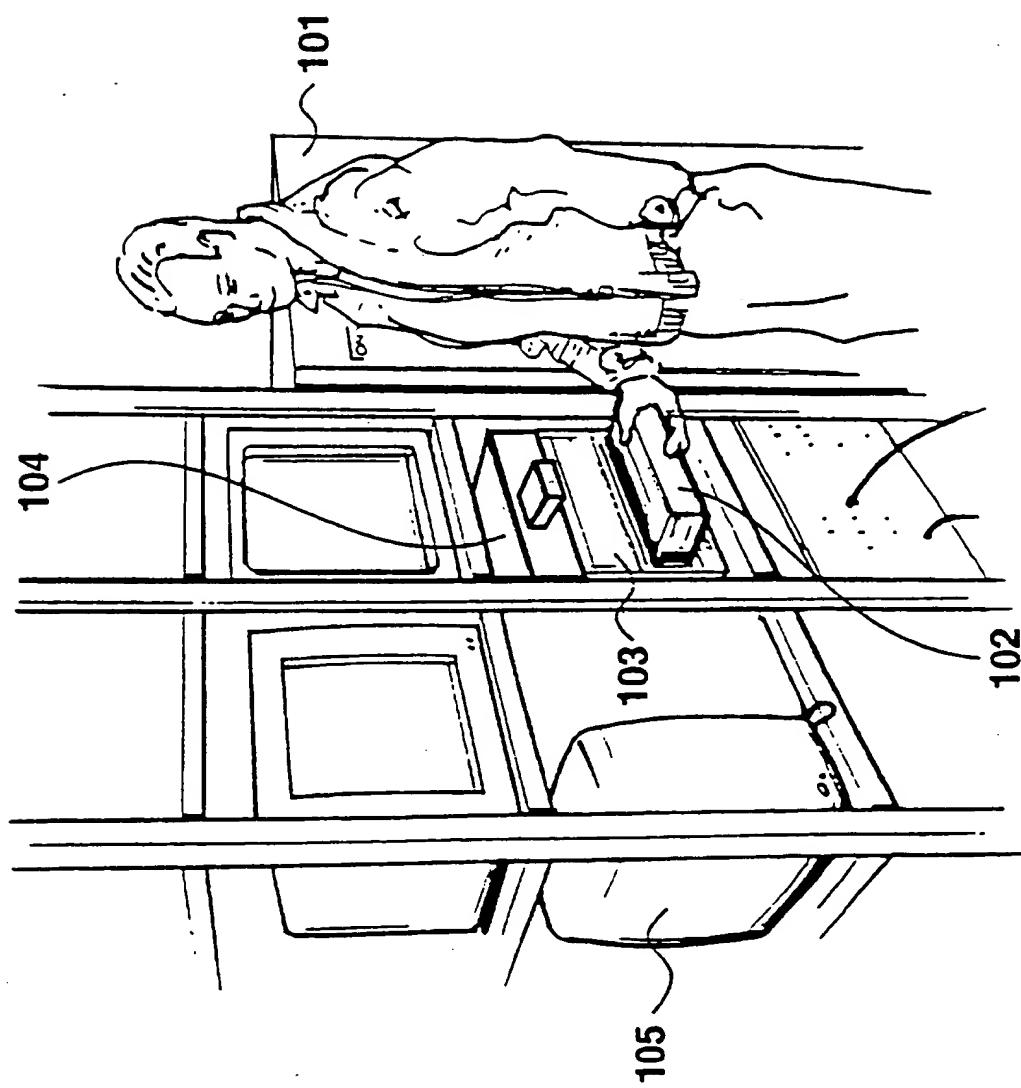


Figure 1

GB 2 325 544 A

BEST AVAILABLE COPY

Figure 1



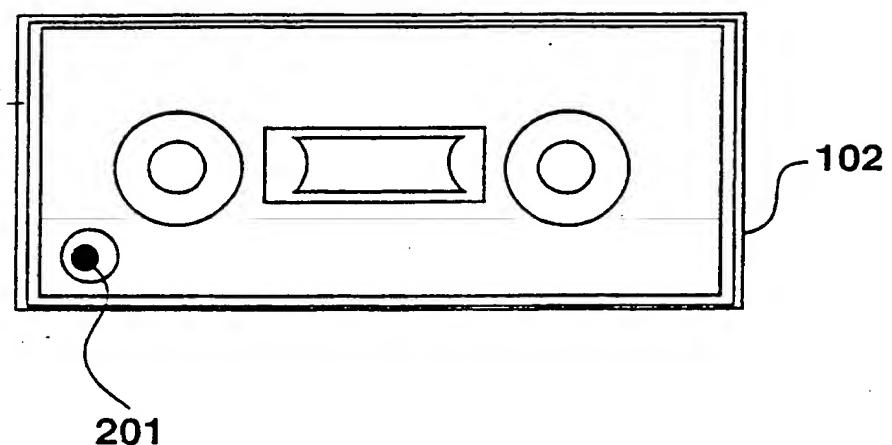


Figure 2A

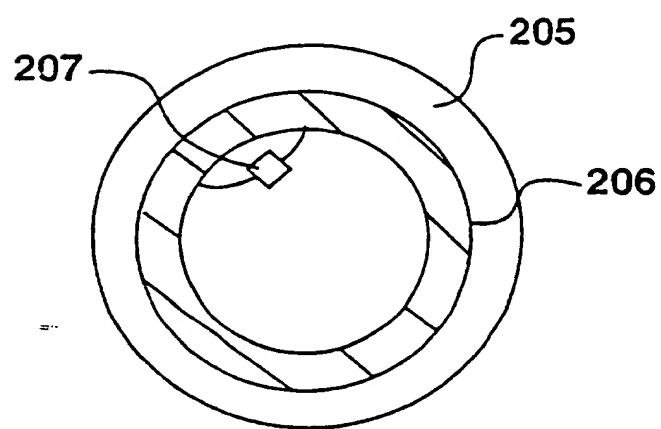


Figure 2B

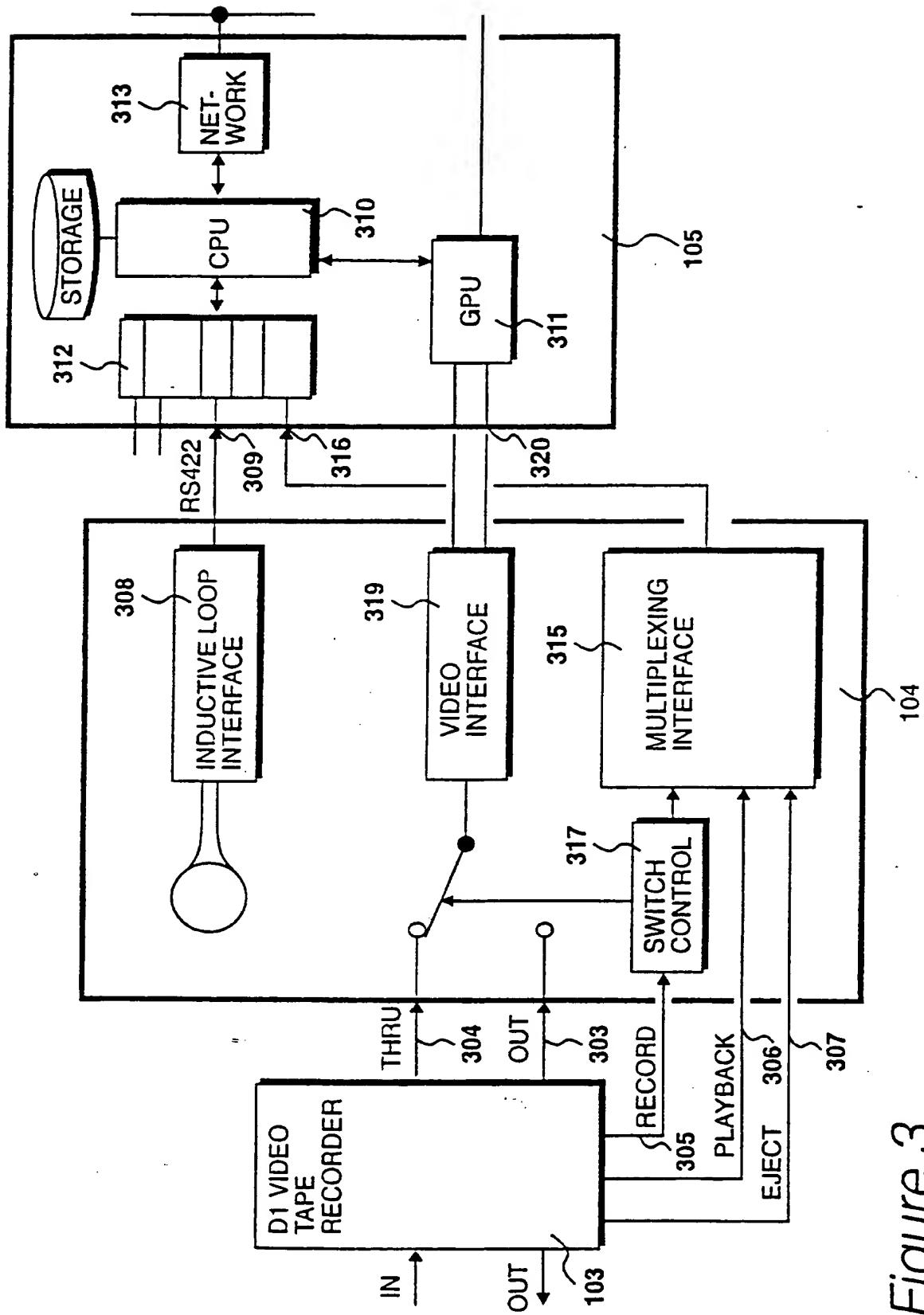


Figure 3

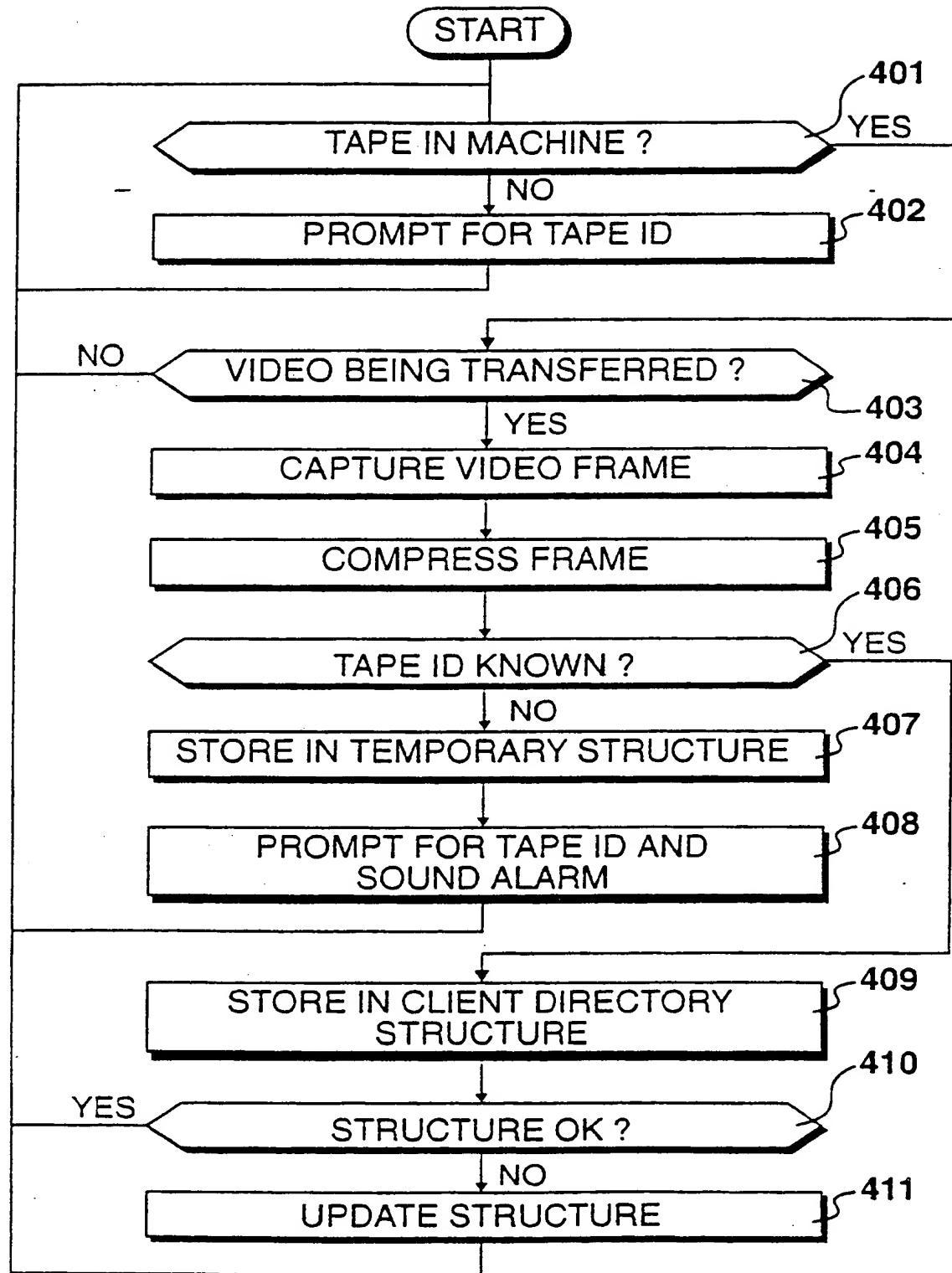


Figure 4...

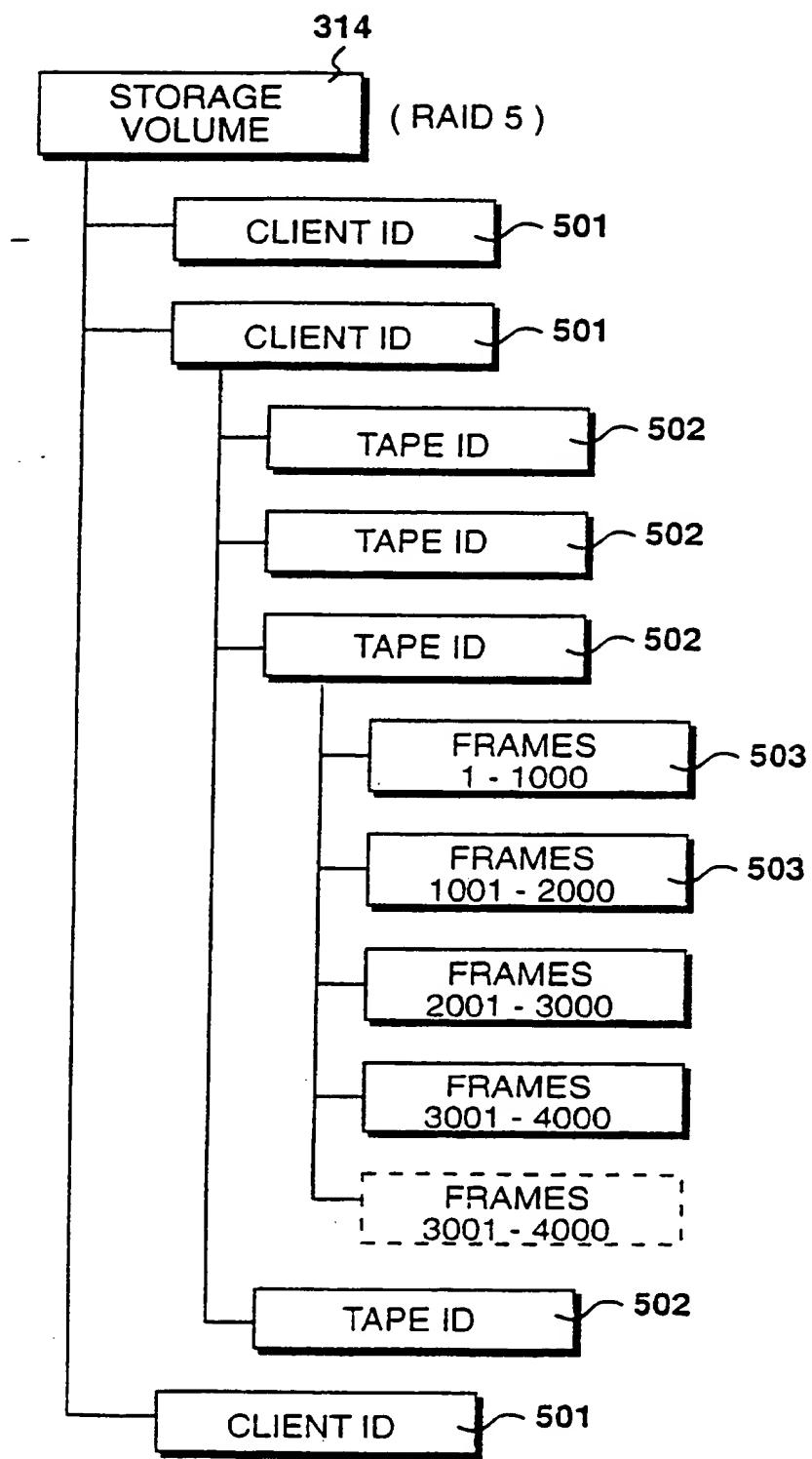


Figure 5

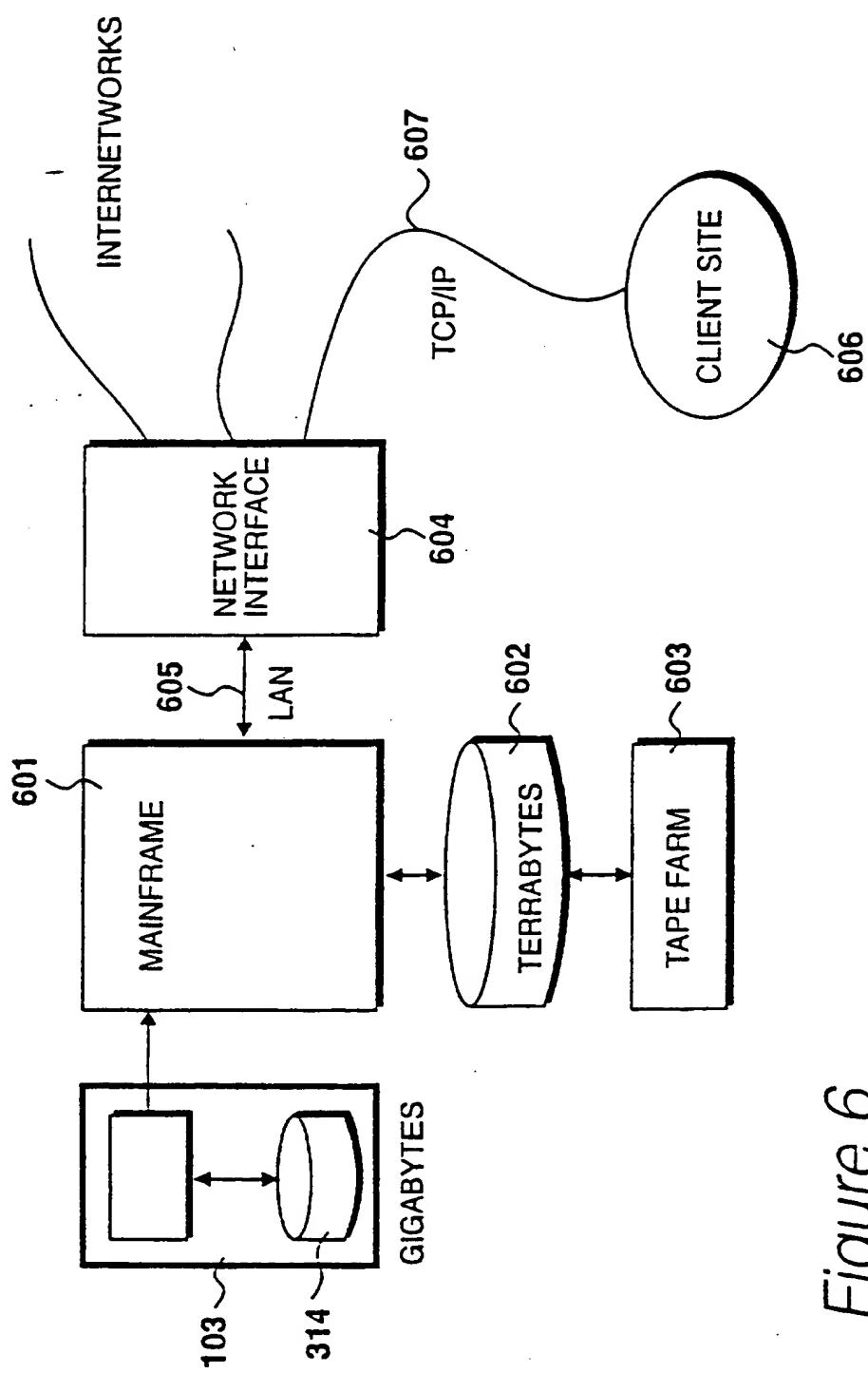


Figure 6

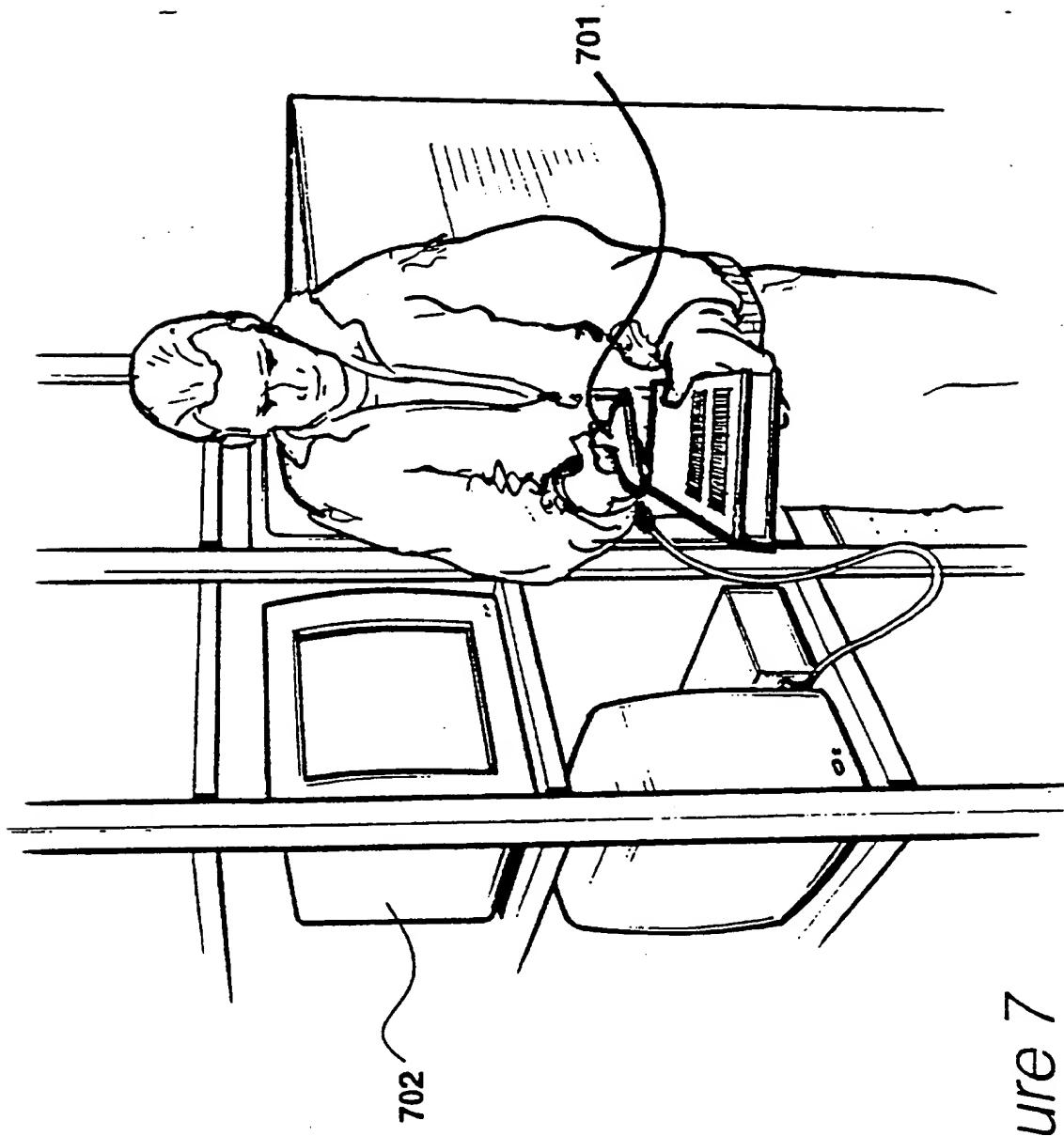


Figure 7

MEDIA DATA DATABASE

Field of the Invention

5 The present invention relates to the creating of a database relating to media data.

Introduction to the Invention

10 Video post production techniques are known in which digital signals representing image frames are manipulated in a process generally referred to as compositing. Video data is stored on magnetic tape such as D1 broadcast quality component tape, transferred into a compositing environment, composed and edited etc, and then recorded back onto digital video tape. As is known in the art, an advantage of transferring data digitally is that many repeated operations may take place or many layers of video may be combined. Ultimately, a final output tape is produced from which broadcastable material may be derived.

15 In creative environments, such as those encouraged within video facilities houses, modifications to video clips are often required at short notice. Often the amount of time available to complete a compositing job is limited, resulting in a tendency to maintain less than perfect records as to the particular nature of a recording stored on various video tapes within the facility. Furthermore, over a period of time, the number of video tapes available within a facility, or available to a particular video production company, increases significantly therefore it is desirable to maintain a record 20 as to where material resides.

25 Problems associated with the handling of video tapes in facilities houses also apply to similar procedures for handing audio tapes and, increasingly, audio signals are being processed within a digital processing facility. In the creation of an audio/video work, possibly for broadcast purposes, it is likely that many independent audio sources will be required

and, assuming the source material is supplied to the facilities house by means of an audio tape, the management of these tapes can again place a significant management burden on the facilities operatives.

Within a database, an alpha-numeric indication may be made as to the nature of video material held on particular tapes. However, compositing operations by their very nature often result in many versions being produced from the same or from similar source material. Similarly, several takes may be available of a similar source scene and a reference to particular characters or to particular actions performed may not be sufficient to uniquely identify a particular video clip. As a result, when a producer or video artist requires a particular video clip, it is often necessary to review a number of tapes to identify the clip of interest which, clearly, is a time consuming and expensive process.

In order to facilitate the identification of clips, it is possible to generate copies of these clips at reduced bandwidth such that the reduced bandwidth version may be reviewed in an on-line environment. Thus, substantially smaller image frames, known as "proxies" may be held on a conventional data processing system which, when provided with sufficient data storage capacity, allows video clips to be reviewed in a way that is significantly faster than reviewing the original source tapes. However, such a system in itself requires additional time for the source material to be captured for the purpose of generating proxies. This incurs a cost in that equipment is being used exclusively for this purpose and is thereby not available for creative work, in addition to an operator being required in order to update the database. Furthermore, in addition to storing the proxies, it is also necessary to generate a database record relating particular clips to the location of the original source material, further adding to the burden of the procedure and thereby increasing the likelihood of the procedure not being adopted.

30 Audio material and visual material, taking the form of still image frames or video clips is collectively referred to herein as "media data". Thus,

media data may take the form of an audio sequence, a collection of still image frames, a single image frame or a video or cinematographic film clip.

Summary of the Invention

5 According to a first aspect of the present invention, there is provided a method of creating a database relating to audio media, wherein said data is transferred between a storage medium and a processing environment, comprising steps of detecting a transfer of media data between said processing environment and said data storage medium; making a database 10 copy of said detected media data; and relating said database copy of said media data to said storage medium.

Brief Description of the Drawings

15 *Figure 1* shows a video post production facility, in which a digital video tape is being inserted into a tape player;

Figure 2A details the video tape identified in *Figure 1*, having an inductive tag applied thereto;

Figure 2B details the inductive tag illustrated in *Figure 2A*.

20 *Figure 3* shows a schematic representation of equipment for building a database of image data, including a video tape recorder, an interface unit and a processing device;

Figure 4 identifies operations performed by the processing device shown in *Figure 3*, including a step for storing image frames in a directory structure;

25 *Figure 5* details the directory structure identified in *Figure 4*;

Figure 6 illustrates the system for transferring data from the processing device shown in *Figure 3*.

Figure 7 shows an alternative embodiment for identifying video tapes.

Detailed Description of The Preferred Embodiments

The invention will now be described by way of example only with reference to the previously identified drawings. In a video facilities house, post production stations are provided in which a video artist views video clips and initiate manipulations of said clips in response to interface units, such as a stylus and touch tablet. Processing equipment is often held in another room, so that the video artist is insulated from noise generated by the equipment and so that the equipment may be maintained under optimal operating conditions in terms of temperature and humidity etc. This also ensures that sensitive equipment is kept away from the working environment of the artists station.

In most facilities houses, more than one artists station is provided, each communicating with a processor room. In this way, resources within the processor room may be selectively connected to particular stations thereby enhancing the adaptability of the overall facility, particularly given that artists and producers are usually charged on the basis of the actual equipment being used for a particular job.

Part of a post production processing room is illustrated in *Figure 1*. Manipulations performed on digitised video clips or digitised cinematographic film may be processed on a general purpose computing platform such as an Onyx 101 manufactured by Silicon Graphics Inc. The processor may implement instructions such as those licensed under the trade marks FLAME or FIRE by Discreet Logic Inc, performing compositing or editing functions respectively.

In order for compositing or editing operations to be performed in the digital domain, it is necessary for source material to be captured by the Onyx system 101 from source material, possibly in the form of a D1 video tape 102 or in the form of cinematographic film. To initiate a capturing process, a D1 video tape 102 (in this example) is inserted into the video tape recorder 103, whereafter the tape recorder is placed in a play condition, usually in response

to remote operations made by a video artist. After material has been captured, compositing and editing procedures may be performed, whereafter the new material may be written to a similar tape. Thus tape recorder 108 may record information received from the Onyx system 101 onto an output tape, similar to tape 102.

In conventional systems, an operator, would be required to mark-up the new tape and ensure that records are maintained identifying the original source material and the newly post produced material. Several copies of the output tape may be made to ensure that back-ups are available but, generally, after the compositing or editing has been done, all of the captured material within the Onyx environment is deleted, given that storage space at full bandwidth definition is a limited resource and will be required for the next job.

The processor room environment shown in *Figure 1* has been modified in accordance with the present invention. Firstly, all tapes used by the present system include machine readable data which uniquely defines that tape. All tapes entering the facility have an inductive tag applied thereto configured to store information representing a unique identifying number. In this way, the identifying number may be associated to a particular customer and to a particular tape belonging to that customer.

The Onyx computer 101 is arranged to store reduced definition proxies of video clips such that said proxies may be related to tape numbers or similar references. In this way, it is possible for the proxies to be reviewed in real time interactively by an operator, thereby allowing an operator to identify particular clips. In this way, several months, say, after a compositing operation has been performed, it would be possible for a producer to review several sets of proxies in order to identify a particular video clip which may again be of interest. In this way, it is not necessary for detailed notes to be made identifying the particular type of material held on each video tape, provided that an appropriate library system is maintained such that

referenced tapes may be quickly identified. Thus, after reviewing proxies, a producer may be able to identify a particular tape held within their library system for use in a new job. Access to the proxy database is also provided over an internet connection such that the database held at the post production facility may be viewed remotely at customer's premises in order to identify particular video tapes which may be stored at said premises. Customers may also be given access to proxies as a job is progressing, such that the work may be reviewed at an interim stage over the internet or an intranet as progress is being made.

The system shown in *Figure 1* substantially enhances the way in which a database of proxies is maintained while significantly reducing the burden placed on operators in order to maintain said database. In particular, it is not necessary for an operator or an artist to replay video material from tape exclusively for proxy generation to be effected. Image data is transferred between a storage medium, such as D1 video tape and a processing environment, such as the Onyx 101 running FLAME. The transfer of image data in this way is automatically detected when the material is being transferred from the D1 machine to the Onyx 101, a replay operation, or when video material is being transferred from the Onyx to the D1 machine, a record operation. As this transfer occurs, a database copy of the detected image is automatically stored and, once stored, the database copy of the images is related to the respective storage medium. Thus, information is provided or detected identifying the particular video tape concerned, to be replayed or recorded. Whereafter, the particular video information being recorded to, or replayed from, is recorded separately, for the database purposes, and the two information objects are then related in the database so that the proxies may be reviewed in an on-line environment. Thereafter, from the relational table, a unique reference to the video source is immediately given.

The tape recorder 103 provides a signal to the interface unit 104 indicating whether the tape recorder is recording video or replaying video. Video signals generated by the tape recorder 103 during play back are supplied to the Onyx system 101 and, similarly, the tape recorder 103 is used 5 to record video information received from the Onyx system. In addition, this video information, whether in replay mode or in playback mode, is also supplied in parallel to an interface unit 104, such that said unit 104 receives an indication as to whether tape replay or record is taking place, while also receiving a copy of the video information that is being replayed by the video 10 tape recorder or recorded by the video tape recorder. Thus, whenever video data is transferred between the video tape recorder 103 and another system, such as the Onyx system 101, a copy of this information is supplied to the interface unit 104.

The interface unit 104 selects video information from a record port or 15 from a playback port and conveys this to a video in port of a Silicon Graphics 02 system 105. Furthermore, the interface unit 104 receives time code from the video tape recorder which is conveyed to a serial port of the 02 system 105. Thus, a video input port of the 02 system 105 receives video data from 20 the video tape recorder 103. A first serial port of the 02 system receives time code from the tape recorder 103 and a second serial port of the 02 system 105 receives detected information from interface unit 104.

Video tape 102 is detailed in *Figure 2A*. In this example, the tape is 25 designed for recording digital video signals in accordance with the well known and established D1 format. However, the tape could be used for conveying any media data, such as video data stored in alternative formats at higher definition, lower definition or in compressed form etc; still image frames at high definition for printing purposes or in compressed form such as in accordance with J-PEG compression techniques; or audio data stored in either digital or analogue form. Furthermore, the invention is not exclusively 30 limited to the storage of media on tape and alternative formats may be used.

such as magnetic disks, optical disks, magneto-optical disks in any formats, such as CD's, mini disks, floppy disks or high capacity magnetic disks etc.

Whenever a tape or other storage medium is used in the facilities house, a check is made to ensure that an inductive tag 201 has been applied to the tape 102. Each inductive tag identifies a unique reference, therefore this unique reference is used whenever a tape is used without fear of reference duplication. Alternatively, if an operator is required to use a tape which does not have a tag in place, a tag will be applied to the tape before the tape is actually inserted within a machine. Alternatively, a facilities house could adopt a policy to the effect that all tapes are checked on entering the facility, with tags being applied thereto in the reception area. Alternatively, suppliers could be instructed to supply tapes with tags already applied and it is possible that, in future, as the system becomes more widely adopted, tags of this type could be applied as part of the manufacturing process.

Inductive tag 201 is detailed in *Figure 2B*. The tags are fabricated on a polyethylene substrate 205 having an inductive coil 206 and an identity chip 207 embedded therein. An adhesive is applied to a surface of the substrate thereby allowing it to be attached easily to a video tape 102.

When the inductive tag is placed in the vicinity of an interface unit 104, the tag receives a pulse of electromagnetic energy which in turn results in a voltage being induced within the coil 206. This voltage is supplied to the identity chip 207 thereby energising said chip. The energising process consists of rectifying and regulating the induced power whereafter a serial stream of electromagnetic pulses are generated for retransmission by the inductive coil 206 in an encoded form, thereby transmitting the unique identifying number contained within the chip. During manufacturing, each chip is programmed with a unique identifying code thereby ensuring that each chip presents a unique digital output when energised by the coil.

A schematic representation of the environment illustrated in *Figure 1* is given in *Figure 3*. Video tape recorder 103, interface circuit 104 and

processing system 105 are given similar reference numerals. The video tape recorder 103 supplies video data over output port 301 in playback mode and receives video data over input port 302 during record mode. In addition, video signals supplied to output port 301 are also supplied to a second output port 303, which communicates with the interface unit 104. Similarly, signals received on input port 302 are also passed through the tape recorder 103 to a through output 304 which is also received by the interface unit 104.

The video tape recorder 103 generates status signals, in which a TTL logic level 1 is placed on line 305 when the machine is recording, a similar level is placed on line 306 when machine 201 is playing a tape back and a similar TTL logic level is placed on line 307 when a tape is being ejected. All three of these lines 305 to 307 are supplied to the interface unit 104. Unit 104 also receives output signals from an inductive detector which are in turn supplied to a inductive loop interface circuit 308, arranged to convey serial information over an RS422 connection to a first serial interface 309 of the processing device 103.

Processing device 105 is a conventional 02 system produced by Silicon Graphics Inc which, for the purposes of this disclosure, may be considered to comprise a central processing unit 310, a specialised graphics processing unit 311, interface cards 312, a network card 313 and a local storage device 314. The output from the inductive loop interface 308 is supplied to one of the serial interface cards 312, whereafter said information may be processed by the central processing unit 310. The central processing unit 310 also has read only memory for temporarily storing data and instruction programs.

Within the interface unit 104, the control lines 305, 306 and 307 are received by a multiplexing interface 315, arranged to multiplex the incoming signals and to transmit the data over a serial RS422 connection to a second serial input port 316 of the processing device 103. The record control signal on line 305 is supplied to the multiplexing interface 315 via a switch control

5 circuit 317. A switch 318 selectively supplies the output video signal from line 303 or the output video signal from line 304 to a video interface 319. The video interface 319 performs serial to parallel conversion, whereafter the parallel signal, in an accepted format, is supplied to a video input 320 of the processing device 103, which in turn conveys the video information to the graphics processor 311.

10 When the signal on control line 305 is high, switch control 307 is activated and switch 318 is forced into its upper position as illustrated in Figure 3, such that the incoming video information on line 302, the information being recorded by the video tape recorder 201, is passed over "through" line 304 to the video interface 319. If the video tape recorder is not recording video information, the output on control line 305 is low and no output is generated by switch control 307. Switch 318 is mechanically biased and under these conditions will switch to its alternative location (the alternative to that shown in Figure 3), resulting in output line 303 being connected to the video interface 319. Thus, if the video tape recorder is not recording video information, it is possible for any playback to be relayed to the video interface 319 and subsequently onto the processing device 103.

15 When the tape recorder 201 is recording video data or when the tape recorder 201 is replaying video data, this video data is relayed to the graphics processing unit 311 via the video interface 319. Within the graphics processing unit 311 relatively low bandwidth proxies are generated in response to the received full bandwidth video data. Many bandwidth production processes of this type, sometimes referred to as "decimation" are known and for a particular implementation, trade offs may be made in terms of the quality of the proxies against the processing capabilities available within the system. Thus, in the simplest implementation, certain lines may be rejected and of the remaining lines certain pixels within said lines may be rejected. However, the graphics processing unit 311 within the 02 machine is capable of performing more sophisticated filtering operations so as to

generate a proxy which retains a greater portion of the original information.

In alternative systems, particularly where the degree of storage must be minimised, more sophisticated compression techniques may be employed, such as those defined in accordance with J-PEG or M-PEG recommendations. The compressed video proxies are supplied to the central processing unit 310 which is then responsible for writing these proxies to the local storage device 314. The CPU 310 should have received bar code information identifying the particular tape being recorded or replayed and in response to this information the compressed data is appropriately stored within the storage device 314. It is appreciated that eventually the storage device 314 will become full therefore provision is made for the data to be transferred to a larger environment via network card 313.

Procedures performed by the processing device 313 are illustrated in Figure 4. After a tape has been removed from the video tape recorder 201, a signal will have been generated on control line 307 which will have been relayed to processing system 105 via the multiplexing interface 315 and serial port 316. After receiving such a signal, the processing system 313 enters a state representing a condition to the effect that no tape is in the machine. At step 401 a question is asked as to whether a tape is present in the machine and when answered in the negative, a prompt is issued to monitor 105 requesting tape identity information.

As tape 102 is being inserted into the tape recorder 103, the interface unit 104 energises inductive tag 202, resulting in identity information being returned back to interface unit 104. A signal received on control line 305 (record) or a control signal on line 306 (playback) indicates that a tape had been inserted in the machine, resulting in the question asked at step 401 being answered in the affirmative. Given the nature of tape recorders and their necessity to stabilise before video transfer takes place, a delay is incurred between instructions being issued to the machine and the machine being in a state where stable video may actually be transferred. Thus, after

detecting a record or playback condition, a question is asked at step 403 as to whether video is being transferred. If this question is answered in the negative, control is returned to step 401, resulting in the processing system entering a loop until video is detected.

5 On detecting the transfer of video, effectively the reception of a video signal via the graphical processing unit 311, the question asked at step 403 is answered in the affirmative and the video frame is captured by the graphical processing unit 311 at step 404. Processing unit 311 is then configured to compress the frame at step 405 and to make the compressed video data available to the central processing unit 310.

10 At step 406 a question is asked as to whether the tape identification data is known. This data should be known because the tag 201 should have been energised when the tape was placed in the recorder. However, if the question asked at step 406 will be answered in the negative, resulting in the captured and compressed video being stored in a temporary structure at step 15 407. Thereafter, at step 408 a prompt is made for the tape identification to be supplied, possibly with the addition of an audible alarm sounding. Thereafter, control is returned to step 401, awaiting the reception of the next video frame.

20 Under normal operating conditions the tape identification data will be known to the system, resulting in the question asked at step 406 being answered in the affirmative. Under these conditions, control is directed to step 409, resulting in the captured and compressed video data being stored in a client directory structure at step 409. This structure may require housekeeping operations to be performed, particularly as directories become 25 large, therefore a question is asked at step 410 as to whether the client structure is satisfactory. If this question is answered in the negative, the structure is updated at step 411, whereafter control is returned to 401. If no updating of the structure is required, the question asked at step 410 is answered in the affirmative and again control is returned to step 401.

5 The storage structure for compressed video frames is illustrated in *Figure 5*. Each individual frame is stored as a data file within a conventional Unix file structure. The storage volume **314** may incorporate redundant data so as to protect said data, possibly in accordance with RAID 5 recommendations. Thus, the storage volume **314** may be considered as the root directory for the purposes of the file structure.

10 The root directory is divided into client directories **501**, each having its own unique client identification number. Within the client directories, specific tape directories **502** are created for each unique tape. The tapes are pre-formatted with time code and as such each tape will comprise several thousand frames. The frame number, specified by its time code, is used as the file name which exists within frame directories **503**, each containing a maximum of 1000 frames. Thus, when 1000 frames have been written to a frame directory **503**, the question asked at step **410** will be answered in the negative and at step **411** a new frame directory is created for the subsequent 1000 frames.

15 A particular attraction of the structure shown in *Figure 5* is that video data associated with each video tape may be captured in any sequence. As a frame is captured its unique time code is identified, resulting in that frame being written to the appropriate directory. Thus, if frames within the region 1 to 1000 are captured, subsequently followed by frames in the range 3000 to 4000, the new frames will be written to the appropriate frame sub-directory such that, over time, as more of the tape is played, more of its complete contents will be captured and stored within the structure as proxies.

20 25 It is appreciated that the volume of data transferred between video tape recorders and processing environments within a facilities house is extremely large therefore storage volume **314** would soon become full. Volume **314** and its associated processor **103** are illustrated in *Figure 6*. System **103** is connected to a mainframe computer **601** via its network card **313**. At regular intervals, preferable during periods when the equipment is not

being used, the mainframe computer 601 interrogates storage device 314 so as to effect a transfer of its data thereby clearing storage device 314 for new jobs. The data retrieved by mainframe computer 601 is supplied to a large terabyte store 602, while maintaining a data structure, on a larger scale, substantially similar to that shown in *Figure 5*.

It is appreciated that even the terabyte store 602 may itself become full after a period of time, so that procedures are put in place for archiving the material to a tape farm or similar system 603.

Mainframe computer 601 is itself connected to a network interface 604 via a local area network 605. The network interface 604 provides connections to internetworks so that clients, such as a client at client site 606, may interrogate data stored on storage device 602 via a TCP/IP link 607.

An alternative embodiment is shown in *Figure 7*, in which inductive tags have been replaced by bar codes.

In order to locate a unique reference for each customer, it has been suggested that the tapes are labelled with customers internet addresses, given that each customer will automatically be given a unique internet address. This is represented by the first bar code applied to the tape with a second bar code uniquely identifying the tape itself. Thus, in combination, these two bar codes identify the tape uniquely against all other existing tapes. Furthermore, the bar codes may be applied, in the form of sticky backed paper, to both the D1 tape itself and to the case carrying the D1 tape. A similar approach may be adopted with other video tape, such as EXABYTE tapes for high definition work and Betacam tapes for low definition work. Furthermore, machine room operators would be instructed only to use tapes which have bar codes applied thereto and to ensure that these bar codes are scanned as tapes are entered into the tape recorders. Prior to inserting a video tape into a video tape recorder, an operator is invited to scan the bar codes. The bar codes are scanned by a bar code scanner 701 and as a bar code is scanned, information derived from the bar code is displayed on a

monitor 702, such that an operator has a visual indication to confirm that both of the bar codes have been read correctly. Bar code reading procedures executed by system 103 may allow the two bar codes to be read in any order and may prompt the user to read both of the bar codes twice to ensure that a correct capturing has been effected.

Claims

1. A method of creating a database relating to media data, wherein said data is transferred between a storage medium and a processing environment, comprising steps of

detecting a transfer of media data between said processing environment and a data storage medium;

making a database copy of said detected media data; and

relating said database copy of said media data to said storage

10 medium.

2. A method according to claim 1, wherein said media data is image data in the form of a plurality of image frames.

15

3. A method according to claim 1, wherein said image data is derived from broadcast quality video signals or digitised cinematographic film.

4. A method according to claim 1, wherein said processing environment performs editing or compositing.

20

5. A method according to claim 1, wherein said transfer is detected by detecting operating conditions of a recording apparatus.

6. A method according to claim 1, wherein said database copy is recorded at reduced definition.

7. A method according to claim 1, wherein said database copy is made available over a local area network, a wide area network or an internetwork.

8. A method according to claim 7, wherein said internetwork operates in accordance with TCP/IP recommendations.

5 9. A method according to claim 1, wherein said database copy is stored on magnetic disks.

10 10. A method according to claim 9, wherein said database copy is captured by a capturing processor having local disk storage, whereafter said data is transferred to a database system.

15 11. Database apparatus configured to relate a database copy of media data to storage medium storing said media data, comprising means for detecting a transfer of media data between a processing environment and a data storage medium; copying means configured to make a database copy of said detected media data; and means for relating said database copy of said media data to said storage medium.

20 12. Apparatus according to claim 11, wherein said means for detecting operation of said first recording device includes means for interrogating status lines of said recording device.

25 13. Apparatus according to claim 11, wherein said means for transferring detected image data includes a switch for selecting data transfers to said first recording device or from said first recording device.

30 14. Apparatus according to claim 11, wherein said second storage device includes means for compressing detected image data and storing said

compressed image data.

5 15. Apparatus according to claim 11, wherein said first recording device records video data to magnetic tape and/or replays video data from magnetic tape.

10 16. Apparatus according to claim 15, wherein said first storage device is arranged to store film resolution images, D1 broadcast video or low bandwidth video data.

15 17. A method of creating a database relating to media data, substantially as herein described with reference to the accompanying drawings.

15 18. Database apparatus configured to relate a database copy of media data to a storage medium, substantially as herein described with reference to the accompanying drawings.

Amendments to the claims have been filed as follows

5 1. A method of creating a database relating to media data, wherein said data is transferred between a storage medium and a processing environment, comprising the steps of

10 detecting a transfer of media data between said processing environment and a data storage medium;

15 making a database copy of said detected media data; and

20 relating said database copy of said media data to said storage medium.

25 2. A method according to claim 1, wherein said media data is image data in the form of a plurality of image frames.

30 3. A method according to claim 2, wherein said image data is derived from broadcast quality video signals or digitised cinematographic film.

35 4. A method according to claim 1, wherein said processing environment performs editing or compositing.

40 5. A method according to claim 1, wherein said transfer is detected by detecting operating conditions of a recording apparatus.

45 6. A method according to claim 1, wherein said database copy is recorded at reduced definition.

50 7. A method according to claim 1, wherein said database copy is made available over a local area network, a wide area network or an internetwork.

8. A method according to claim 7, wherein said internetwork operates in accordance with TCP/IP recommendations.

5 9. A method according to claim 1, wherein said database copy is stored on magnetic disks.

10 10. A method according to claim 9, wherein said database copy is captured by a capturing processor having local disk storage, whereafter said data is transferred to a database system.

15 11. Database apparatus configured to relate a database copy of media data to storage medium for storing said media data, comprising means for detecting a transfer of media data between a processing environment and a data storage medium; copying means configured to make a database copy of said detected media data; and means for relating said database copy of said media data to said storage medium.

20 12. Apparatus according to claim 11, wherein said means for detecting a transfer of media data includes means for interrogating status lines of said recording device.

25 13. Apparatus according to claim 11, wherein said means for copying detected image data includes a switch for selecting data transfers to said first recording device or from said first recording device.

30 14. Apparatus according to claim 11, wherein said copying means includes means for compressing detected image data and storing said

compressed image data.

15. Apparatus according to claim 11, wherein said data storage medium records video data to magnetic tape and/or replays video data from magnetic tape.

16. Apparatus according to claim 15, wherein said data storage medium is arranged to store film resolution images, D1 broadcast video or low bandwidth video data.

10

17. A method of creating a database relating to media data, substantially as herein described with reference to the accompanying drawings.

15

18. Database apparatus configured to relate a database copy of media data to a storage medium, substantially as herein described with reference to the accompanying drawings.



The
Patent
Office

22

Application No: GB 9806719.2
Claims searched: 1-18

Examiner: Mike Davis
Date of search: 17 September 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): G4A (AUDB), G5R (RGB, RHE, RB81, RAC)

Int Cl (Ed.6): G06F, G11B

Other:

Documents considered to be relevant:

| Category | Identity of document and relevant passage | Relevant to claims |
|----------|---|--------------------|
| | None | |

| | | | |
|---|---|---|--|
| X | Document indicating lack of novelty or inventive step | A | Document indicating technological background and/or state of the art. |
| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention. |
| & | Member of the same patent family | E | Patent document published on or after, but with priority date earlier than, the filing date of this application. |

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS**
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- FADED TEXT OR DRAWING**
- BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- SKEWED/SLANTED IMAGES**
- COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- GRAY SCALE DOCUMENTS**
- LINES OR MARKS ON ORIGINAL DOCUMENT**
- REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.